SOIL LEAD CONCENTRATIONS IN RESIDENTIAL AREA OF CONCERN IN THE VICINITY OF TONOLLI CANADA LTD. AND THE FORMER EXIDE PLANT- MISSISSAUGA, 1987 - 1989

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Soil Lead Concentrations in Residential Area of Concern in the Vicinity of Tonolli Canada Ltd. and the Former Exide Plant - Mississauga, 1987-1989.

Introduction

Historical lead emissions from both the Tonolli Company of Canada Ltd. and the nearby former Exide plant have contributed to elevated soil lead levels on neighbouring commercial-industrial and residential properties in the Dixie Road/Queensway area of Mississauga. Exide, a battery manufacturer, which operated for many years in this area, ceased operations in May 1986. The commercial-industrial area lies to the north of the Queensway, while the residential area extends south of the Queensway and east and west of Dixie Road. Area residents have been concerned about soil lead levels, particularly since there has been replacement of soil with 500 ppm lead or greater on residential properties near two other lead smelters in the Toronto area.

Since May 1987, staff of the Phytotoxicology Section have conducted extensive soil sampling programs throughout the commercial-industrial and residential areas in the vicinity of Tonolli and the former Exide plant. Much of the sampling throughout the residential areas was requested by local residents and staff of the Peel Region Public Health Department.

The results of the sampling program in the commercial/industrial area have been previously reported, as has the soil lead data which has been obtained throughout surrounding residential areas (MOE reports ARB-171-87-Phyto, ARB-197-87-Phyto and ARB-095-88-Phyto). Data obtained from the sampling programs in 1987 were used to construct computer-generated contours of surface soil lead concentrations to delineate the area of concern with 500 ppm lead or higher in surface soil (0-5 cm). The 500 ppm contour, based on the 1987 data, is shown on attached Figure 1, which was extracted from a previous report (ARB-095-88-Phyto).

More recently, in 1988 and 1989, soil sampling was performed on residential and publicly accessible properties (south of Queensway) not previously sampled within the 500 ppm (1987) contour through to essentially one property beyond this contour to ensure that all properties potentially affected by Tonolli/Exide emissions, at a soil level of 500 ppm lead or higher, were identified. Within this "area of concern" (delineated by the broken black line on the attached figure), all residential properties now have been sampled. This report presents the soil lead results which have been found to date throughout this residential sampling area.

The addition of the 1988 and 1989 results to the existing (1987) data base resulted in only a slight change in the 500 ppm contour.

The updated 500 ppm contour (Figure 2) remains inside the residential sampling area that is delineated on Figure 1 by the broken line.

Residential Sampling Program - 1987-89

Common sampling sites throughout the residential area were boulevards, front and back lawns, vegetable gardens and flower or shrub beds. Also sampled were several grass covered ditches and unpaved driveways. A few distinct child play areas (e.g. sandbox) additionally were sampled. In addition, surface soil was sampled from the publicly accessible hydro right-of-way to the neighbouring west and east of Dixie Road, as well as from the publicly accessible boulevard which extended along the east side of Dixie Road between Sherway Drive and the hydro right-of-way. Undisturbed lawn or grass covered sites were sampled at a depth of 0-5 cm while disturbed sites (gardens, bedding areas, tilled orchard sites) were sampled at usual tilled depth (0-15 cm). Shallower sampling (0-2 cm) was conducted at driveway sites where packed and/or very coarse soil was encountered. In addition to surface soil sampling, subsoil was collected from several sites at one or more depths (usually 15-20 cm) to assess the extent of sub-surface soil lead contamination. Duplicate samples normally were sampled except in cases where subsoil (one sample per site) was collected. Lawn and other grass covered sites were sampled with an Oakfield soil sampler, while disturbed sites (e.g. vegetable gardens, flower beds, sandboxes and driveways) were sampled with a small hand shovel.

The soil samples were processed (air dried and seived to 0.35 mm particle size) in the Phytotoxicology Laboratory and were analyzed for lead by the MOE laboratory Services Branch.

Results

The attached table shows the soil lead results for all residential and publicly accessible soil collection sites sampled within the previously defined residential sampling area based on the 500 ppm soil lead contour.

Throughout this area, a total of 135 residential properties (601 sites) were sampled. Of this total, 97 properties (221 sites) were found to have a surface soil lead level of 500 ppm or higher. All sites with a soil lead level equal to or greater than 500 ppm are underlined in the table. A soil lead level of 1000 ppm or higher was found on 38 properties (28% of total) at 52 sites (8.5%), with 34 of these sites being boulevards. On 23 properties (17%), only the boulevard site(s) had 1000 ppm or more of lead.

Of the 13 publicly accessible sites sampled on the hydro right-of-way (west and east of Dixie Road) and on the boulevard along the east side of Dixie Road (between Sherway Ave. and hydro right-of-way), 10 sites had a soil lead level of greater than 500 ppm, with

9 sites having in excess of 1000 ppm lead in surface soil.

The highest surface soil (0-5 cm) lead concentrations of 2800 ppm (Dixie Road) and 2750 ppm (Denise Road) were found at boulevard sites in the general vicinity of the intersection of Dixie Road and Queensway Avenue.

At the 73 sites where both surface soil and subsoil samples were collected, lead levels of 500 ppm or higher were detected only in the surface soil (0-5 cm).

Summary

The extensive MOE soil sampling programs in the vicinity of Tonolli and the former Exide plant during 1987 through 1989 have allowed determination of the residential area of concern in which numerous properties and/or sites are affected by soil lead levels of 500 ppm or higher.

Of the 135 residential properties (601 sites) sampled throughout the previously defined residential area of concern, 97 properties (221 sites) had a lead level in surface soil (0-5 cm) of 500 ppm or higher. A soil lead level of 1000 ppm or higher was found on 38 properties (52 sites), and only at the boulevard site(s) on 23 properties. Also, nine of the 13 publicly accessible sites, 10 of which were boulevards, had a soil lead level of greater than 1000 ppm. The highest soil lead levels of 2800 and 2750 ppm were found at boulevard sites fronting residential properties in the general vicinity of the Dixie Road/Queensway Avenue intersection. At residential sites where lead was elevated and subsoil additionally was sampled, only the surface soil (0-5 cm) was found to have a lead level equal to or above 500 ppm lead.

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SOIL LEAD DATA FOR RESIDENTIAL SAMPLING AREA NEAR TONOLLI AND FORMER EXIDE PLANT - MISSISSAUGA - 1987-1989

LOCATION	SITE	Pb-ppm	DATE	REMARK
DENISE ROAD	FRONT LAWN	285	1987	
	BOULEVARD	500	1987	
	DEPTH 15-20 CM	38	1987	
	BACK LAWN	390	1987	
DENISE RD	FRONT LAWN	385	1987	
	BOULEVARD	595	1987	
	BACK LAWN	500	1987	
DENISE RD	FRONT LAWN	480	1987	
	DEPTH 15-20 CM	31	1987	
	BOULEVARD	815	1988	
	SIDE LAWN	400	1987	
	BACK LAWN	290	1987	
	DEPTH 15-20 CM	73	1987	
DENISE RD	FRONT LAWN	510	1987	
	BOULEVARD	705	1987	
	DEPTH 15-20 CM	21	1987	
	BACK LAWN	290	1988	NEW SOIL
	BACK BED	300	1988	BACKYARD E LIMIT
	BACK BED	130	1988	BACKYARD N LIMIT
DENISE RD	FRONT LAWN	350	1988	FACING DENISE
	FRONT BED	165	1988	
	BOULEVARD	540	1988	
	SIDE LAWN	395	1988	FACING VENTA
	SIDE BED	135	1988	
	SIDE BLVD	490	1988	
DENISE RD	FRONT LAWN	410	1987	
	BOULEVARD	740	1988	
	BACK LAWN	320	1987	
	GARDEN	255	1987	
DENISE RD	FRONT LAWN	445	1987	
	DEPTH 15-20 CM	35	1987	
	BOULEVARD	785	1987	
	DEPTH 15-20 CM	120	1987	
	BACK LAWN	480	1987	
	DEPTH 15-20 CM	150	1987	
DENISE RD	FRONT LAWN	350	1987	
	BOULEVARD	790	1988	

DENISE RD	FRONT LAWN	475	1987	
	BOULEVARD	830	1987	
	DEPTH 15-20 CM	23	1987	
	BACK LAWN	285	1988	
	SIDE LAWN	385	1987	
	DEPTH 15-20 CM	34	1987	
DENISE RD	FRONT LAWN	355	1987	
	BOULEVARD	240	1988	
	BACK LAWN	390	1987	
	GARDEN	175	1987	
DENISE RD	FRONT LAWN	490	1987	
	BOULEVARD	985	1988	
	BACK LAWN	425	1987	
	GARDEN	235	1987	
DENISE RD	FRONT LAWN	1050	1987	
	BOULEVARD	1750	1988	
	BACK LAWN	395	1987	
	GARDEN	200	1987	
DENISE RD	FRONT LAWN	540	1987	
	BOULEVARD	730	1988	
	BACK LAWN	490	1987	
DENISE RD	FRONT LAWN	930	1987	
	DEPTH 15-20 CM	20	1987	
	BOULEVARD	1600	1987	
	DEPTH 15-20 CM	29	1987	
	BACK LAWN	605	1987	
	DEPTH 15-20 CM	40	1987	
	GARDEN	260	1987	
DENISE RD	FRONT LAWN	410	1987	
	DEPTH 15-20 CM	140	1987	
	BOULEVARD	710	1987	
	BACK LAWN	430	1987	
	DEPTH 15-20 CM	100	1987	
DENISE RD	FRONT LAWN	960	1987	
	BOULEVARD	1700	1988	
	BACK LAWN	520	1987	
	GARDEN	315	1987	
DENISE RD	FRONT BED	66	1987	
	BLVD BEDS	130	1988	NO LAWN
	BACK BEDS	260	1988	W AND N BEDS
	BACK BED	200	1988	RAISED BED S LIMIT

DENISE RD	FRONT LAWN	515	1987	
	BOULEVARD	835	1987	
	BACK LAWN	375	1988	
	BACK BED	275	1988	CENTER OF BACKYARD
	BACK BED	210	1988	BACKYARD E LIMIT
	SANDBOX	210	1988	BACKYARD
DENISE RD	FRONT LAWN	575	1987	
	BOULEVARD	880	1988	
	BACK LAWN	690	1987	
DENISE RD	FRONT LAWN	550	1987	
	DEPTH 15-20 CM	61	1987	
	BOULEVARD	970	1988	
	BACK LAWN	102	1987	
DENISE RD	FRONT LAWN	240	1987	
	BOULEVARD	370	1988	
	BACK LAWN	265	1988	E LIMIT
	BACK LAWN	215	1988	W LIMIT
	BACK BED	365	1988	W SIDE OF POOL PATIO
DENISE RD	FRONT LAWN	690	1987	
	DEPTH 13-18 CM	210	1987	
	DEPTH 25-30 CM	140	1987	
	BOULEVARD	1350	1987	
	DEPTH 15-20 CM	61	1987	
	BACK LAWN	475	1987	
	GARDEN	260	1987	
DENISE RD	FRONT LAWN	535	1987	
	DEPTH 15-20 CM	180	1987	
	BOULEVARD	655	1988	
	BACK LAWN	675	1987	
	DEPTH 15-20 CM	210	1987	
DENISE RD	FRONT LAWN	625	1987	
	BOULEVARD	1100	1988	
	BACK LAWN	410	1987	
	GARDEN	320	1987	
DENISE RD	FRONT LAWN	940	1987	
	BOULEVARD	1075	1988	
	BACK LAWN	740	1987	
DENISE RD	FRONT LAWN	630	1987	
	BOULEVARD	1100	1988	
	BACK LAWN	425	1987	
	GARDEN	350	1987	
DENISE RD	FRONT LAWN	950	1987	
	BOULEVARD	1600	1987	
	BACK LAWN	860	1987	
	BACK BED	925	1988	

DENISE RD	FRONT LAWN	490	1987
	DEPTH 15-20 CM	150	1987
	BOULEVARD	1050	1987
	BACK LAWN	470	1987
	DEPTH 15-20 CM	230	1987
	GARDEN	285	1987
DENISE RD	FRONT LAWN	990	1987
	BOULEVARD	1250	1988
	BACK LAWN	1050	1987
	BACK BED	910	1987
DENISE RD	FRONT LAWN	680	1987
	BOULEVARD	1350	1988
	BACK LAWN	450	1987
	GARDEN	315	1987
DENISE RD	FRONT LAWN	730	1987
	DEPTH 15-20 CM	250	1987
	BOULEVARD	1350	1988
	BACK LAWN	965	1987
	DEPTH 15-20 CM	420	1987
	GARDEN	760	1987
DENISE RD	FRONT LAWN	820	1987
	BOULEVARD	565	1987
	DEPTH 15-20 CM	110	1987
	BACK LAWN	475	1987
	GARDEN	455	1987
DENISE RD	FRONT LAWN	890	1987
	BOULEVARD	1300	1988
	BACK LAWN	1200	1987
DENISE RD	FRONT LAWN	865	1987
	BOULEVARD	1070	1988
	BACK LAWN	1500	1987
DENISE RD	FRONT LAWN	680	1987
	BOULEVARD	1700	1988
	SIDE BLVD	1250	1987
	SIDE LAWN	760	1987
	DEPTH 15-20 CM	120	1987
	BACK LAWN	455	1987
	SIDE GARDEN	385	1987
DENISE RD	FRONT LAWN	740	1987
	DEPTH 15-20 CM	360	1987
	BOULEVARD	2750	1988
	BACK LAWN	1800	1987
	DEPTH 15-20 CM	480	1987
	GARDEN	930	1987

DENISE RD	FRONT LAWN	445	1987	
	BOULEVARD	1900	1988	
	BACK LAWN	2200	1987	
	GARDEN	885	1987	
DENISE RD	FRONT LAWN	330	1987	
	BACK LAWN	220	1987	NEW SOIL
	BACK LAWN	715	1987	ORIGINAL SOIL
	GARDEN	985	1987	ORIGINAL SOIL
DENISE RD	FRONT LAWN	995	1987	
	DEPTH 15-20 CM	450	1987	
	BOULEVARD	2000	1988	
	BACK LAWN	470	1987	
	DEPTH 15-20 CM	410	1987	
DENISE RD	FRONT LAWN	830	1987	
	BOULEVARD	1500	1988	
	BACK LAWN	680	1987	
DENISE RD	FRONT LAWN	655	1987	
	BOULEVARD	1200	1987	
	BACK LAWN	530	1987	
	DEPTH 15-20 CM	170	1987	
	GARDEN	500	1987	
DENISE RD	FRONT LAWN	610	1987	
	BOULEVARD	970	1988	
	SIDE LAWN	645	1987	
	BACK LAWN	500	1987	
DENISE RD	FRONT LAWN	655	1987	
	BOULEVARD	990	1988	
	BACK LAWN	570	1987	
	GARDEN	345	1987	
DENISE RD	FRONT LAWN	720	1987	
	BOULEVARD	905	1988	
	BACK LAWN	480	1987	

DENISE RD	FRONT LAWN	490	1987	
	DEPTH 15-20 CM	76	1987	
	BOULEVARD	690	1987	
	SIDE LAWN	630	1987	
	BACK BED	92	1988	NW CORNER
DENISE RD	FRONT LAWN	620	1987	
	BOULEVARD	900	1987	
	DEPTH 15-20 CM	140	1987	
	SIDE LAWN	515	1987	
	DEPTH 15-20 CM	140	1987	
	BACK LAWN	230	1987	
DENISE RD	FRONT LAWN	635	1987	
	BOULEVARD	1400	1988	
	BACK LAWN	325	1987	

DIXIE RD	FRONT LAWN	320	1987	
	BOULEVARD	735	1987	N SIDE OF SHERWAY DR
	BOULEVARD	2000	1988	E SIDE OF DIXIE RD
	SIDE LAWN	300	1987	
	DEPTH 15-20 CM	45	1987	
	BACK LAWN	320	1988	
	BACK BED	365	1988	NW CORNER
DIXIE RD	FRONT LAWN	495	1988	
	FRONT BED	740	1988	E OF DR, N OF WALK
	BOULEVARD	410	1988	N DRIVEWAY AREA
	BOULEVARD	295	1988	CENTER DRIVEWAY AREA
	N SIDE LAWN	395	1988	
	N BED	250	1988	FLWR BED/ROCK GARDEN
	S SIDE LAWN	235	1988	
	S BED	275	1988	FLWR/ROCK BED
	BACK LAWN	245	1988	W OF RESIDENCE
	BACK BED	270	1988	
	GARDEN	140	1988	
DIXIE RD	FRONT LAWN	265	1988	
	FRONT BED	225	1988	E SIDE OF RESIDENCE
	FRONT BED	260	1988	N LIMIT DRIVEWAY
	BOULEVARD	1800	1988	
	BACK LAWN	535	1988	
	BACK BED	205	1988	S LIMIT
	BACK GRAPE BED	255	1988	N LIMIT
	GARDEN	330	1988	

DIXIE RD	FRONT LAWN	340	1988	
	FRONT BED	240	1988	E SIDE OF RESIDENCE
	BOULEVARD	1800	1988	
	S SIDE LAWN	430	1988	
	N SIDE LAWN	230	1988	
	GARDEN	155	1988	N OF HOUSE
DIXIE RD	FRONT LAWN	345	1988	
	FRONT BED	345	1988	
	BOULEVARD	1250	1988	
	N LAWN	210	1988	
	S LAWN	320	1988	FACING PRIMATE RD
	S BED	125	1988	S SIDE OF RESIDENCE
	BACK LAWN	240	1988	W SIDE OF HOUSE
	BACK BED	150	1988	
DIXIE RD	FRONT LAWN	145	1988	
	FRONT BED	240	1988	
	BOULEVARD	2250	1988	N OF DRIVE
	BOULEVARD	1350	1988	S OF DRIVE
	SIDE LAWN	360	1988	N OF HOUSE
	SIDE BED	440	1988	
DIXIE RD	FRONT LAWN	620	1987	
	BOULEVARD	825	1987	E SIDE OF DIXIE RD
	BACK LAWN	575	1987	W END OF LAWN AREA
	BACK LAWN	485	1987	E END OF LAWN AREA
	ORCHARD LAWN	490	1988	
	TILLED ORCHARD	435	1988	E END S OF VENTA
	TILLED ORCHARD	450	1988	W END S OF VENTA
	ORCHARD BLVD	435	1987	W END S OF VENTA
	ORCHARD BLVD	455	1987	OPPOSITE DENISE RD
DIXIE RD	BOULEVARD	2800	1987	
	S SIDE LAWN	325	1987	
	N LAWN	255	1987	
	N GRASS STRIP	670	1987	
	NE GRASS STRIP	845	1987	
	BACK LAWN	290	1987	
DIXIE RD	FRONT LAWN	1350	1987	
	BOULEVARD	530	1987	
	BACK LAWN	490	1987	
	DEPTH 15-20 CM	57	1987	
	GARDEN	150	1987	
	E ORCHARD	440	1987	
	W ORCHARD	355	1987	
	SIDE DITCH	530	1987	
	DRIVEWAY	385	1987	

DIXIE RD	BOULEVARD	1450	1987	
	S BLVD	415	1987	
	CORNER BLVD	455	1987	
	BACK LAWN	655	1987	
	SIDE LAWN	830	1987	
	GARDEN	560	1987	
DIXIE RD	FRONT LAWN	600	1987	
	BOULEVARD	2500	1987	
	DEPTH 15-20 CM	250	1987	
	BACK LAWN	1000	1987	
	GARDEN	705	1987	BY GARAGE
	SIDE GARDEN	515	1987	
DIXIE RD	FRONT LAWN	620	1987	
	BOULEVARD	1150	1988	
	S SIDE LAWN	825	1987	
	DEPTH 15-20 CM	52	1987	
	N SIDE LAWN	1250	1987	
	DEPTH 15-20 CM	56	1987	
	BACK LAWN	660	1987	
	VINEYARD	665	1987	
DIXIE RD	FRONT LAWN	795	1987	
	BOULEVARD	2400	1988	
	S SIDE LAWN	810	1987	
	N SIDE LAWN	795	1987	
	DEPTH 15-20 CM	75	1987	
	BACK LAWN	655	1987	
	GARDEN	330	1987	
DIXIE RD	FRONT LAWN	810	1987	
	DEPTH 15-20 cm	350	1987	
	BOULEVARD	950	1988	
	S SIDE LAWN	1450	1987	
	BACK LAWN	1350	1987	
	DEPTH 15-20 cm	95	1987	
	SE GARDEN	680	1987	
DIXIE RD	FRONT LAWN	905	1987	S END
	FRONT LAWN	680	1987	N END
	BOULEVARD	1300	1988	
	N SIDE LAWN	595	1987	
	N SIDE GARDEN	525	1987	
	BACK LAWN	1010	1988	
	BACK BED	535	1988	W LIMIT
	BACK BED	420	1988	ROSE BED N OF WALK
DIXIE RD	FRONT LAWN	2500	1987	
	DEPTH 15-20 CM	270	1987	
	BACK LAWN	665	1987	
	DRIVEWAY	830	1987	

DIXIE RD	VACANT W END	1950	1987	VACANT LOT
	VACANT E END	2200	1987	
PUBLICLY ACCESSIBLE SITES				
HYDRO RIGHT-OF-WAY AREA OF DIXIE ROAD	BOULEVARD	1800	1988	W OF DIXIE RD
	GRASS AREA	450	1988	W OF DIXIE BY 10 m
	GRASS AREA	395	1988	W OF DIXIE BY 30 m
	BOULEVARD	780	1987	E OF DIXIE RD
	GRASSED FIELD	185	1987	E OF DIXIE BY 40 m
BOULEVARDS E SIDE OF DIXIE RD	BOULEVARD	1050	1988	W OF SAFEWAY CR
	BOULEVARD	1300	1987	W OF SAFEWAY CR
	BOULEVARD	1500	1988	W OF SAFEWAY CR
	BOULEVARD	1450	1988	W OF SAFEWAY CR
	BOULEVARD	1350	1988	W OF SAFEWAY CR
	BOULEVARD	1700	1988	W OF SAFEWAY CR
	BOULEVARD	1250	1988	W OF SAFEWAY CR
	BOULEVARD	1300	1987	W OF SAFEWAY CR

KENDALL RD	FRONT LAWN	450	1988	
	FRONT BED	270	1988	
	FRONT DITCH	350	1988	
	BACK LAWN	460	1988	
	BACK BED	240	1988	BY RES, E OF HT PUMP
	BACK BED	180	1988	BACKYARD S LIMIT
KENDALL RD	FRONT LAWN	370	1988	
	FRONT W BED	255	1988	BETW JUN & CRAB TREE
	FRONT N BED	385	1988	BETW CEDAR & CRAB
	FRONT N BED	505	1988	E OF ENTR BY PLANTER
	FRONT DITCH	515	1988	BY ROAD
	BACK LAWN	275	1988	
	BACK BED	220	1988	S SIDE OF HOUSE

MELTON DR	FRONT LAWN	195	1987	
	FRONT DITCH	135	1988	
	BACK LAWN	150	1987	
	DEPTH 15-20 cm	100	1987	
MELTON DR	FRONT LAWN	155	1987	
	FRONT DITCH	71	1988	
	BACK LAWN	165	1987	
	GARDEN	115	1987	

MELTON DR	FRONT LAWN	160	1987	
	FRONT DITCH	49	1988	
	BACK LAWN	165	1987	
	DEPTH 15-20 cm	48	1987	
MELTON DR	FRONT LAWN	185	1987	
	DEPTH 15-20 CM	22	1987	
	FRONT DITCH	16	1988	
	BACK LAWN	180	1987	
	DEPTH 15-20 CM	34	1987	
MELTON DR	FRONT LAWN	270	1987	
	FRONT DITCH	44	1988	
	BACK LAWN	345	1987	
MELTON DR	FRONT LAWN	275	1987	
	FRONT DITCH	180	1988	
	BACK LAWN	325	1987	
MELTON DR	FRONT LAWN	230	1987	
	FRONT DITCH	270	1987	
	BACK LAWN	245	1987	
MELTON DR	FRONT LAWN	275	1987	
	DEPTH 15-20 CM	76	1987	
	FRONT DITCH	435	1988	
	BACK LAWN	250	1987	
	DEPTH 15-20 CM	33	1987	
MELTON DR	FRONT LAWN	345	1987	
	FRONT DITCH	335	1988	
	BACK LAWN	260	1987	
MELTON DR	FRONT LAWN	280	1988	
	FRONT BED	600	1988	W OF FRONT STEPS
	FRONT DITCH	350	1988	
	DRIVEWAY	1135	1988	
	E SIDE LAWN	470	1988	
	E BED	260	1988	
	BACK LAWN	725	1988	
MELTON DR	FRONT LAWN	295	1987	
	FRONT DITCH	175	1987	
	DRIVEWAY	300	1987	
	BACK LAWN	305	1987	
MELTON DR	FRONT LAWN	55	1987	
	BACK LAWN	51	1987	

SAFEWAY CRES	FRONT LAWN	245	1987
	DEPTH 15-20 CM	175	1987
	BOULEVARD	235	1989
	BACK LAWN	295	1987
	DEPTH 15-20 CM	260	1987
	W GARDEN	225	1987
	E GARDEN	190	1987
SAFEWAY CRES	FRONT LAWN	365	1987
	BOULEVARD	305	1989
	BACK LAWN	290	1987
	GARDEN	430	1987
SAFEWAY CRES	FRONT LAWN	375	1987
	BOULEVARD	480	1987
	BACK LAWN	360	1987
	N GARDEN	440	1987
	S GARDEN	360	1987
SAFEWAY CRES	FRONT LAWN	275	1987
	BOULEVARD	415	1989
	BACK LAWN	360	1987
	DEPTH 15-20 CM	230	1987
	N GARDEN	345	1987
	S GARDEN	370	1987
SAFEWAY CRES	FRONT LAWN	310	1987
	BOULEVARD	520	1987
	BACK N GARDEN	335	1987
	BACK S GARDEN	340	1987
SAFEWAY CRES	FRONT LAWN	415	1987
	BOULEVARD	400	1989
	BACK LAWN	470	1987
SAFEWAY CRES	FRONT LAWN	340	1987
	BOULEVARD	380	1989
	BACK LAWN	580	1987
SAFEWAY CRES	FRONT LAWN	280	1987
	BACK LAWN	305	1987
	GARDEN	250	1987
SAFEWAY CRES	FRONT LAWN	390	1987
	BOULEVARD	720	1989
	BACK LAWN	530	1987
	BACK GARDEN	290	1987

SIDNEY DR	FRONT LAWN	330	1987	
	DEPTH 15-20 CM	86	1987	
	FRONT DITCH	200	1988	
	S SIDE LAWN	440	1987	
	N SIDE LAWN	455	1987	
	BACK LAWN	345	1987	
	GARDEN	160	1987	
SIDNEY DR	FRONT LAWN	275	1988	
	FRONT BED	290	1988	BY FRONT WINDOW
	FRONT DITCH	103	1988	
	S SIDE LAWN	210	1988	
	S BED	215	1988	S SIDE OF HOUSE
SIDNEY DR	FRONT LAWN	420	1987	
	FRONT DITCH	205	1987	
	BACK LAWN	515	1988	
	GARDEN	295	1987	
SIDNEY DR	FRONT LAWN	300	1988	
	FRONT BED	210	1988	RAISED BED S OF ENTR
	FRONT BED	305	1988	N OF ENTRANCE
	FRONT DITCH	180	1988	
	BACK LAWN	255	1988	
	BACK BED	160	1988	BACKYARD S LIMIT
	RASPBERRY BED	205	1988	BACKYARD W LIMIT
	GARDEN	120	1988	
SIDNEY DR	FRONT LAWN	335	1987	
	FRONT DITCH	560	1988	
	BACK LAWN	515	1987	
SIDNEY DR	FRONT LAWN	440	1988	
	FRONT BED	430	1988	S OF DRIVEWAY
	FRONT BED	175	1988	N OF HOUSE ENTRANCE
	FRONT DITCH	465	1988	
	DRIVEWAY	670	1988	
	SIDE BED	170	1988	W OF HOUSE
	BACK LAWN	300	1988	
	GARDEN	62	1988	
SIDNEY DR	FRONT LAWN	520	1987	
	DEPTH 15-20 CM	150	1987	
	FRONT DITCH	850	1988	
	SIDE LAWN	2150	1987	
	BACK LAWN	710	1987	
	DEPTH 15-20 CM	220	1987	

SIDNEY DR	FRONT LAWN	750	1988	
	FRONT BED	380	1988	E OF PLANTER
	FRONT DITCH	270	1988	
	DRIVEWAY	665	1988	
	BACK LAWN	570	1988	
	BACK BED	260	1988	BACKYARD W LIMIT
	BACK BED	255	1988	W SIDE OF HOUSE
SIDNEY DR	FRONT LAWN	605	1987	
	DEPTH 15-20 CM	130	1987	
	FRONT DITCH	600	1987	
	BACK LAWN	840	1987	
	DEPTH 15-20 CM	210	1987	
SIDNEY DR	FRONT LAWN	410	1988	
	FRONT BED	225	1988	N OF HOUSE ENTRANCE
	FRONT DITCH	150	1988	
	BACK LAWN	520	1988	
	BACK BED	340	1988	BACKYARD NE CORNER
	BACK BED	365	1988	BACKYARD W LIMIT
	GARDEN	275	1988	BACKYARD SW CORNER
SIDNEY DR	FRONT LAWN	360	1987	
	FRONT DITCH	150	1988	
	BACK LAWN	620	1987	
SIDNEY DR	FRONT LAWN	540	1987	
	FRONT DITCH	505	1988	
	N SIDE LAWN	475	1987	
	DEPTH 15-20 CM	200	1987	
	N LAWN	540	1988	N OF GARAGE
	BACK LAWN	620	1987	
	GARDEN	450	1987	

VENTA AVE	FRONT LAWN	190	1987	
	BOULEVARD	108	1988	
	BACK LAWN	240	1987	
	GARDEN	295	1987	
VENTA AVE	FRONT LAWN	585	1987	
	DEPTH 15-20 CM	62	1987	
	BOULEVARD	580	1987	
	DEPTH 15-20 CM	42	1987	
	BACK LAWN	670	1987	
VENTA AVE	FRONT LAWN	190	1987	
	BOULEVARD	54	1988	
	BACK LAWN	190	1987	
	GARDEN	270	1987	

VENTA AVE	FRONT LAWN	675	1987	
	DEPTH 15-20 CM	200	1987	
	BOULEVARD	655	1987	
	BACK LAWN	685	1987	
	GARDEN	515	1987	
VENTA AVE	FRONT LAWN	79	1987	
	BOULEVARD	58	1988	
	BACK LAWN	220	1987	
	GARDEN	300	1987	
VENTA AVE	FRONT LAWN	380	1987	
	BOULEVARD	580	1987	
	BACK LAWN	510	1987	
VENTA AVE	FRONT LAWN	165	1988	
	FRONT BED	155	1988	BY FRONT WINDOW
	BOULEVARD	66	1988	
	BACK LAWN	215	1988	
	GARDEN	315	1988	
VENTA AVE	FRONT LAWN	500	1987	
	BOULEVARD	435	1988	
	BACK LAWN	560	1987	
VENTA AVE	FRONT LAWN	225	1987	
	BOULEVARD	90	1988	
	BACK LAWN	225	1987	
	GARDEN	275	1987	
VENTA AVE	FRONT LAWN	370	1987	
	DEPTH 15-20 CM	110	1987	
	BOULEVARD	340	1987	
	DEPTH 15-20 CM	44	1987	
	BACK LAWN	405	1987	
	DEPTH 15-20 CM	190	1987	
	GARDEN	290	1987	
VENTA AVE	FRONT LAWN	180	1988	
	FRONT BED	155	1988	BY FRONT WINDOW
	BOULEVARD	39	1988	
	BACK LAWN	260	1988	
	GARDEN	165	1988	
VENTA AVE	FRONT LAWN	420	1987	
	BOULEVARD	230	1988	
	BACK LAWN	455	1987	

VENTA AVE	FRONT LAWN	180	1988	
	FRONT BED	117	1988	BY FRONT WINDOW
	BOULEVARD	37	1988	
	BACK LAWN	185	1988	
	BACK BED	190	1988	BACKYARD E LIMIT
	GARDEN	165	1988	
VENTA AVE	FRONT LAWN	295	1987	
	BOULEVARD	525	1987	
	DEPTH 15-20 CM	93	1987	
	BACK LAWN	530	1987	
	GARDEN	320	1987	
VENTA AVE	FRONT LAWN	300	1988	
	FRONT BED	185	1988	
	BOULEVARD	690	1988	
	BACK LAWN	205	1988	
	BACK BED	335	1988	BACKYARD E LIMIT
	GARDEN	135	1988	
VENTA AVE	FRONT LAWN	385	1987	
	DEPTH 15-20 CM	22	1987	
	BOULEVARD	565	1988	
	BACK LAWN	160	1987	
	DEPTH 15-20 CM	54	1987	
	BACK BED	38	1987	
	GARDEN	125	1987	
VENTA AVE	FRONT LAWN	330	1988	
	FRONT BED	150	1988	BY FRONT WINDOW
	BOULEVARD	540	1988	
	BACK LAWN	280	1988	
	BACK BED	140	1988	BACKYARD E LIMIT
	GARDEN	155	1988	
VENTA AVE	FRONT LAWN	365	1987	
	BOULEVARD	570	1988	
	BACK LAWN	420	1987	
	GARDEN	180	1987	
VENTA AVE	FRONT LAWN	260	1988	
	FRONT BED	225	1988	
	BOULEVARD	645	1988	
	BACK LAWN	220	1988	
	E GARDEN	125	1988	
	W GARDEN	120	1988	
VENTA AVE	FRONT LAWN	390	1987	
	BOULEVARD	585	1987	
	BACK LAWN	325	1987	
	GARDEN	190	1987	

VENTA AVE	FRONT LAWN	330	1988	
	FRONT BED	290	1988	
	BOULEVARD	635	1988	
	BACK LAWN	210	1988	STRIP S LIMIT
	GARDEN	93	1988	S OF POOL
VENTA AVE	FRONT LAWN	595	1987	
	DEPTH 15-20 CM	24	1987	
	BOULEVARD	875	1987	
	DEPTH 15-20 CM	15	1987	
	BACK LAWN	555	1987	
VENTA AVE	FRONT LAWN	385	1987	
	BOULEVARD	655	1988	
	BACK LAWN	270	1987	
	GARDEN	125	1987	
VENTA AVE	FRONT LAWN	325	1988	
	FRONT BED	205	1988	BY FRONT WINDOW
	BOULEVARD	560	1988	
	BACK LAWN	270	1988	
	BACK W BED	190	1988	
VENTA AVE	FRONT LAWN	61	1987	
	BOULEVARD	810	1987	
	DEPTH 15-20 CM	8	1987	
	E SIDE LAWN	350	1987	
	W SIDE LAWN	490	1987	
	DEPTH 15-20 CM	24	1987	
VENTA AVE	FRONT LAWN	260	1988	
	FRONT BED	250	1988	
	BOULEVARD	500	1988	
	BACK LAWN	210	1988	
	BACK ROSE BED	190	1988	WEST BED
	BACK BED	130	1988	SOUTH BED
VENTA AVE	FRONT LAWN	335	1988	
	BOULEVARD	380	1988	
	BACK LAWN	225	1988	
	GARDEN	110	1988	
VENTA AVE	FRONT LAWN	365	1988	
	FRONT BED	225	1988	
	FRONT BED	255	1988	E BED BY DRIVEWAY
	BOULEVARD	410	1988	
	SIDE LAWN	240	1988	WEST SIDE OF HOUSE
	BACK LAWN	180	1988	
	BACK BED	175	1988	SOUTH LIMIT
	GARDEN	105	1988	WEST LIMIT

VENTA AVE	FRONT LAWN	235	1987	
	BOULEVARD	295	1988	
	BACK LAWN	165	1987	
	GARDEN	115	1987	
VENTA AVE	FRONT LAWN	210	1988	
	FRONT BED	240	1988	
	BOULEVARD	305	1988	
	BACK LAWN	245	1988	S LIMIT
	BACK LAWN	205	1988	STRIP W LIMIT
	BACK BED	180	1988	S LIMIT
	GARDEN	170	1988	
VENTA AVE	FRONT LAWN	655	1987	
	DEPTH 15-20 CM	17	1987	
	BOULEVARD	755	1988	
	BACK LAWN	455	1987	
VENTA AVE	FRONT LAWN	410	1987	
	BOULEVARD	250	1988	
	BACK LAWN	190	1987	
	GARDEN	165	1987	
VENTA AVE	FRONT LAWN	370	1987	
	BOULEVARD	525	1988	
	BACK LAWN	285	1987	
VENTA AVE	FRONT LAWN	615	1987	
	BOULEVARD	850	1988	
	BACK LAWN	350	1987	
	GARDEN	190	1987	
VENTA AVE	FRONT LAWN	315	1987	
	BOULEVARD	530	1987	
	DEPTH 15-20 CM	30	1987	
	BACK LAWN	380	1987	
	DEPTH 15-20 CM	39	1987	
VENTA AVE	FRONT LAWN	295	1988	
	FRONT BED	235	1988	
	BOULEVARD	510	1988	
	BACK LAWN	275	1988	
	GARDEN	89	1988	N LIMIT

- SAMPLING DEPTH WHERE NOT INDICATED WAS 0-5 CM FOR LAWNS, BOULEVARDS AND OTHER GRASSED AREAS; 0-15 CM FOR DISTURBED SITES (GARDENS, BEDS, TILLED SITES) ; 0-2 CM FOR DRIVEWAY SITES

- SOIL CONCENTRATIONS OF 500 PPM OR HIGHER ARE UNDERLINED

Figure 1: Solid Black Line Represents 500 ppm Surface Soil (0-5 cm) Lead Contour And The Broken Line Delineates The Area In Which All Residential Properties Have Been Sampled.

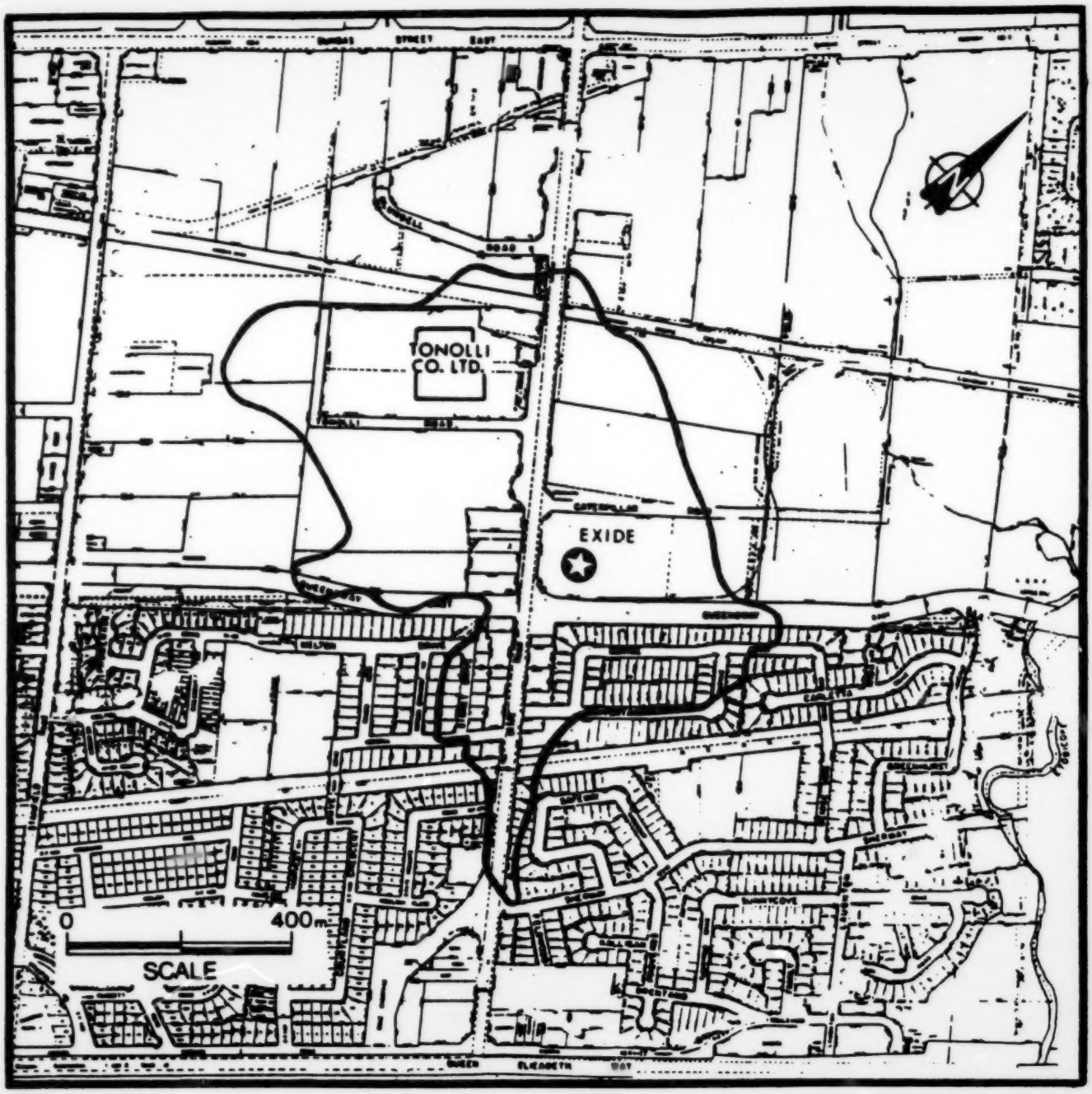

Figure 2: Updated 500 ppm Lead Contour, Based On All Soil Sampling Since 1987